curriculum vitae

DARIN T. ZIMMERMAN, PH.D.

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EDUCATION

1997 Ph.D., Physics, Texas A&M University
Dissertation: *Vibrational Spectroscopy of Adsorbed Molecules Using Self-Assembling Tunnel Junctions.* Advisor: Glenn Agnolet

1990 B.S., Physics, University of California, Irvine

POSITIONS HELD

2015 – present	Associate Dean for Research, Penn State Altoona
2014 – 2015	Assistant Dean for Research (Interim), Penn State Altoona
2009 – 2014	Division Head, Mathematics and Natural Sciences, Penn State Altoona
2010 – present	Professor of Physics, Penn State Altoona
2003 – 2010	Associate Professor of Physics, Penn State Altoona
1997 – 2003	Assistant Professor of Physics, Penn State Altoona

HIGHLIGHTS OF PROFESSIONAL EXPERIENCE

Associate Dean for Research

Advocacy of research and creative activity. Promote a culture of research across all disciplines. Assist faculty in developing research programs and garnering research funding with particular emphasis on helping junior faculty pursue and develop research opportunities and senior faculty identify additional lines of inquiry. Marshal and coordinate resources for tenure-line faculty hires. Conduct outreach and education with respect to grant management best practices and fiduciary responsibilities. Support and advocate for undergraduate research and creative activity, particularly through access to funding opportunities and networking.

Research networking. Foster engagement between college faculty and granting agency program officers as well as faculty at other Penn State locations. Facilitate access to seminars, workshops and related training in grant-seeking, grant-writing, and related activities. Provide access to specialized grant databases and search engines. Serve on the University Research Council, the Industry Partners Working Group, and the Commonwealth College Deans Council. Develop community partnerships with local agencies (e.g., public and private school districts,

Chamber of Commerce). Collaborate with Penn State Altoona's Office of Development and Alumni Relations. Connect faculty with proper administrative resources (e.g., Office of Technology Management, Office of Research Protections).

External grant administration. Provide budgeting and administrative support for grant management by faculty. Provide information about institutional requirements such as overhead, strictures, and protocols related to research including intellectual property, human and animal subjects protection, and related matters. Coordinate with the College's business office, financial office, division offices, and the University's Office of Sponsored Programs, to maintain proper post-award oversight of externally-funded grants. Ensure effective and timely coordination with university- and college-level administrative offices for approvals and other mandated procedures.

Internal grant administration. Coordinate, administer, and develop a vision for internal grants and other funding opportunities within the College and within the University as they relate to opportunities for Penn State Altoona; manage a $500K budget of internal research and travel grants. Oversee the Research Advisory Committee in the review process for all internal funding proposals and the development of strategic policies. In coordination with division staff, manage and track all internal faculty travel awards related to research and creative activity.

Research support planning. Take the lead in coordinating strategic planning related to development and implementation of research-related capabilities. Spearhead efforts related to expanding research capabilities (e.g., develop of Centers/Institutes for focused research). Participate in operational planning and administration as it relates to individual faculty research facilities and infrastructure needs.

Other strategic leadership support. Serve as a member of the Academic Leadership Council in support of the academic mission of the College in regards to policies, planning, budgeting, advising, program development; interface with business and community leaders. Serve as the College's primary STEAM (Science, Technology, Engineering, Arts, and Mathematics) outreach coordinator for seeking/building partnerships within the local public and private education community. Serve as acting division head for promotion to professor reviews.

Division Head for Mathematics and Natural Sciences

Academic programs and curriculum. Develop and maintain academic courses and programs within the Division. Oversee department chairs and program coordinators. Determine course approvals in consultation with appropriate discipline faculty. Develop, in consultation with the faculty, Associate Dean for Academic Affairs, Registrar, and Senior Division of Undergraduate Studies Programs Coordinator, a schedule of classes for each academic session that assigns faculty, classrooms, and time periods. Oversee the selection of qualified candidates for department chairs and degree coordinators following procedures approved by the individual departments and programs. In consultation with department chairs, the Academic Affairs Committee, the Assistant Dean for Policy and Planning, and the Associate Dean for Academic Affairs, develop articulation agreements with other schools (e.g., 3+3 and 4+3 Early Acceptance Program for Penn State Altoona Students to the Lake Erie College of Osteopathic Medicine School of Pharmacy). Oversee assessment and curricular review.

Personnel development, mentoring, and management. Provide leadership for the Division by fostering an environment that values diversity and rewards excellence in teaching, research and creative accomplishments, and service. Empower faculty (52 full- and 30 part-time) and students to reach their full potential; provide and foster faculty mentoring within departments. Assess personnel, space, and facilities needs of the Division and advocate for necessary resources. Organize full-time faculty and staff recruitment (from 2009 – 2014, I successfully advocated for increasing the number of full-time positions, reducing the number of part-time ones, and increasing the numbers of women and other historically underrepresented groups within the faculty ranks). Hire part-time faculty in consultation with the appropriate department chair(s) and/or program coordinator(s). Function as an arbitrator for faculty within the division and for student concerns with regard to courses and programs offered by the division; meet with students and parents/guardians to discuss concerns. Evaluate the performance of department chairs and program coordinators annually; evaluate full-time faculty and staff in the Division annually in accordance with Penn State policies and guidelines. Prepare promotion and tenure dossiers and recommend external reviewers. Evaluate candidates for tenure and promotion (from 2009 – 2014, I oversaw 37 promotion and tenure reviews, including five promotions to Professor and two promotions to Sr. Instructor). Evaluate tenured faculty in the Division according to the five-year extended review requirement. Oversee the evaluation of teaching of all full-time and part-time faculty in the Division; oversee peer review of teaching and collection of student comments within the Division, in accordance with the Review of Teaching Effectiveness procedures.

Resource and facilities development, allocation, and management. Oversee all facilities issues pertinent to the Division (teaching and research laboratories, animal care facilities, instrumentation, classroom space), including space/equipment allocation, lab safety, and renovations (e.g., $2M biology/chemistry teaching laboratories and faculty research spaces in 2012). Manage $500K Division budget and strategically allocate resources to departments and degree programs in consultation with department chairs and program coordinators. Coordinate with the Supervisor of Laboratories, Laboratory Coordinator, and laboratory technicians for biology, chemistry, earth sciences, and physics, to maintain safety, to insure proper procedures are followed, and to insure sufficient resources are allocated for lab preparation. Work with Office of Development and Alumni Relations (ODAR) to raise gift funding in support of the College's strategic plan and division programs.

Policies, planning, procedures. Oversee the elections for committees within the Division. Organize and oversee division policy revisions in consultation with the appropriate committees. Be cognizant of and implement all division, college, and university policies pertinent to the Division. Coordinate with the other division heads and the Associate Dean for Academic Affairs on all pertinent academic, facilities, financial, personnel, and resource issues. Develop a strategic plan for the Division (program, facilities, faculty development, undergraduate learning experiences, etc.) in consultation with the department chairs, program coordinators, and members of the Division. Serve on Chancellor's Council (body consisting of all unit-heads within the College).

Chair of Physics

Develop a schedule of courses and teaching assignments in consultation with discipline faculty. Evaluate the needs for supplies, equipment, and other items for the discipline in conjunction with the faculty of the discipline. Manage the departmental budget and make decisions regarding purchases. Make recommendations concerning course approvals for faculty teaching courses in the discipline. Meet regularly with discipline faculty and the division head to provide input concerning discipline matters. Provide or facilitate mentoring for new and part-time faculty. Provide or facilitate the evaluation of part-time faculty. Serve on the Executive Committee of the Division which deals with division-wide budget, program, and personnel matters.

SERVICE

University Level

- Member, Institutional Conflict of Interest Committee (2016 – present)
- Member, Major Shared Research Instrumentation Group (2016 – present)
- Member, Vice-President for Research's University Research Council (2015 – present)
- Member, Associate VP for Research's Industry Partners Working Group (2015 – present)
- ex-officio: member, Council of Commonwealth College Research Deans (2014 – present)
- Member, Ralph E. Powe Junior Faculty Enhancement Awards Selection Panel (2009)

College Level

- Member, Sheetz Center for Entrepreneurial Excellence (2016 – present)
- ex-officio: member, Engaged Scholarship Task Force (2015 – present)
- Member, Search Committee for Assistant Dean for Policy and Planning (2014)
- Member, Search Committee for College Registrar (2014)
- ex-officio: member, Strategic Planning Committee (2013 – present)
- ex-officio: member, Penn State Altoona Academic Leadership Council (2009 – present)
- ex-officio: member, Academic Affairs Group (2009 – present)
- ex-officio: member, Scheduling Task Force Committee (2009 – present)
- ex-officio: member, Space Committee (2009 – present)
- ex-officio: member, Enrollment Management Group (2009 – 2015)
- ex-officio: member, Chancellor's Council (2009 – 2015)
- Member, Academic Integrity Committee (2009 – 2014)
- Member, Faculty Annual Review Task Force (2009 – 2010)
- Member, Search Committee for Director of Business Operations (2009)
- ex-officio, member, Altoona College Faculty Senate (2009 – present)
- Co-Chair, Strategic Planning Committee, Subcommittee for Goal 6: Develop new sources of non-tuition income, increase tuition income through enrollment growth, and reduce costs through improved efficiencies (2007 – 2008)
- Member, Research Advisory Committee (2005 – 2009)
- Member, Academic Integrity Committee (2002 – 2009)
- Member, Planning Oversight Committee (2001 – 2003)

- Co-Chair, Strategic Planning Committee, Subcommittee for Goal 1: Cultivate academic excellence (2001 – 2002)
- Member, Altoona College Faculty Senate (2001 – 2003)
- Member, Committee on New Degree Programs (1998 – 2008)
- Member, Facilities Planning Committee (1997 – 1998)

Division of Mathematics and Natural Sciences

- Member, Tenure-track Search Committee for Physics (2009 – 2010)
- Chair, Peer-evaluation of Teaching Committee for biology, chemistry, and physics (2009)
- Member, Tenure-track Search Committee for Geosciences (2008 – 2009)
- Member, Promotion and Tenure Task Force Committee (2008 – 2009)
- Member, Peer Evaluation of Teaching Committee for Chemistry (2007); Chair (2008)
- Chair, Peer Evaluation of Teaching Committee for Chemistry (2006)
- Member, Divisional Promotion and Tenure Committee (2005 – 2009)
- Member, Peer Evaluation of Teaching Committee for Mathematics (2005)
- Chair, Peer Evaluation of Teaching Committee for Physics (2004, 2006)
- Chair, Applied Science Degree Committee (2003 – 2007)
- Member, Lab Coordinator Search Committee (2003 – 2004)
- Member, Earth Sciences and Physics Lab Technician Search Committee (2003 – 2004)
- Chair, Department of Physics (2002 – 2009)
- ex-officio: member, Executive Committee of the Division (2002 – 2009)
- Chair, Physics Faculty Search Committee (2002 – 2009)
- Member, Chemistry Faculty Search Committee (2002 – 2009)
- Member, Physics Faculty Search Committee (2000 – 2001)
- Member, Academic Affairs Committee (2000 – 2005)
- Member, Student Affairs and Outreach Committee (2000 – 2003)
- Member, Mathematics Search Committee (1999 – 2000)

PUBLICATIONS

ARTICLES

2016 R.A. Wambold, B.D. Borst, J. Qi, B.G. Willis, G.J. Weisel, and D.T. Zimmerman, "Tunable plasmonic response of metallic nano-antennna heterodimer arrays modified by atomic-layer deposition," *J. Nanophoton.* **10**, 026024 (2016).

2015 R.A. Wambold, J.M. Chen, P.H. Cutler, N.M. Miskovsky, J. Qi, G.J. Weisel, B.G. Willis, and D.T. Zimmerman, "Tunable optical extinction of nano-antennas for solar energy conversion from near-infrared to visible," *Proc. SPIE* **9547**, Plasmonics: Metallic Nanostructures and Their Optical Properties XIII, 95471H (2015).

2014 B.G. Willis, J. Qi, X. Jiang, J. Chen, G.J. Weisel, and D.T. Zimmerman, "Selective-Area Atomic Layer Deposition of Copper Nanostructures for Direct Electro-Optical Solar Energy Conversion," *Electrochem. Soc. Trans.* **64**, 253 (2014).

2013 N.M. Miskovsky, P.H. Cutler, A. Mayer, B.G. Willis, D.T. Zimmerman, G.J. Weisel, J.M. Chen, T.E. Sullivan, P.B. Lerner "The role of geometry in nanoscale rectennas for rectification and energy conversion," *Proc. SPIE* ***8824***, Next Generation (Nano) Photonic and Cell Technologies for Solar Energy Conversion IV, 88240S (2013).

2009 D.T. Zimmerman, R.C. Bell, J.A Filer II, J.O. Karli, and N.M. Wereley, "Elastic percolation transition in nanowire-based magnetorheological fluids." *Appl. Phys. Lett.* **95**, 014102 (2009).

2008 D.T. Zimmerman, J.D. Cardellino, K.T. Cravener, K.R. Feather, N.M. Miskovsky, and G.J. Weisel, "Microwave absorption in percolating metal-insulator composites," *Appl. Phys. Lett.* **93**, 214103 (2008).

R.C. Bell, J.O. Karli, A.N. Vavreck, D.T. Zimmerman, G.T. Ngatu, and N.M. Wereley, "Magnetorheology of submicron diameter iron microwires dispersed in silicone oil," *Smart Mater. Struct.* **17**, 015028 (2008).

2007 R.C. Bell, E.D. Miller, J.O. Karli, A.N. Vavreck, and D.T. Zimmerman, "Influence of particle shape on the properties of magnetorheological fluids," *Int. J. Mod. Phys.* B **21**, 5018 (2007).

R.C. Bell, E.D. Miller, J.O. Karli, A.N. Vavreck, D.T. Zimmerman, "Influence of particle shape on the properties of magnetorheological fluids," in *Electrorheological Fluids and Magnetorheological Suspensions: Proc. of the 10th Int. Conf. on ERMR 2006*, F. Gordaninejad, O. Graeva, A. Fuchs, and D. York, eds., World Scientific Publishing Co., Inc., New York (2007).

J. Ma, J.F. Diehl, E.J. Johnson, K.R. Martin, N.M. Miskovsky, C.T. Smith, G.J. Weisel, B.L. Weiss, and D.T. Zimmerman, "Systematic study of microwave absorption, heating, and microstructure evolution of porous copper powder metal compacts," *J. Appl. Phys.* **101**, 074906 (2007).

2001 D.T. Zimmerman and G. Agnolet, "Inelastic electron tunneling measurements using adjustable oxide-free tunnel junctions," *Rev. Sci. Instrum.* **72**, 1781 (2001).

2000 G. Agnolet and D.T. Zimmerman. "Intensity studies of inelastic electron tunneling spectra." *Physica* B **284**, 1842 (2000).

G. Agnolet, S.R. Savitski, and D.T. Zimmerman "Zero bias features in self-assembling tunnel junctions." *Physica* B **284**, 1840 (2000).

1999 D.T. Zimmerman and G. Agnolet. "A point contact device for use as an in-situ chemical sensor." Chemical Sensors IV: *Proc. Electrochem. Soc.* **99-23**, 390 (1999).

D.T. Zimmerman, M.B. Weimer, and G. Agnolet. "An adjustable oxide-free tunnel junction for vibrational spectroscopy of molecules." *Appl. Phys. Lett.* **75**, 2500 (1999).

1996 D.T. Zimmerman, M.B. Weimer, and G. Agnolet. "Vibrational spectroscopy of molecules using self-assembling tunnel junctions." *Czech. J. Phys.* **46,** S5, 2835 (1996).

BOOKS

2009 Zimmerman, D.T., *Physics: The Core Concepts*, an algebra-based physics textbook for college students; 30 chapters, 1059 pages. Includes figures and problem sets. Manuscript completed under contract for McGraw-Hill Higher Education, Dubuque, IA.

BOOK CHAPTERS

2014 R.C. Bell, D.T. Zimmerman, and N.M. Wereley, "Magnetorheology of Fe Nanofibers Dispersed in a Carrier Fluid," in *Magnetorheology: Advances and Applications*, pp. 31-55, N. M. Wereley, ed., Royal Society of Chemistry, Oxfordshire, UK (2014).

2013 N.M. Miskovsky, P.H. Cutler, P.B. Lerner, A. Mayer, B.G. Willis, D.T. Zimmerman, G.J. Weisel, and T.E. Sullivan, "Nanoscale rectennas with sharp tips for absorption and rectification of optical radiation," in *Rectenna Solar Cells*, pp. 135-161, G. Moddel and S. Grover, eds., Springer, New York (2013).

2010 R.C. Bell, D.T. Zimmerman, and N.M. Wereley, "Impact of nanowires on the properties of magnetorheological fluids and elastomer composites," in *Electrodeposited Nanowires and Their Applications*, pp. 189-212, N. Lupu, ed., Intech Publishing, Croatia (2010).

RESEARCH FUNDING (Award total: $1,135,000)

EXTERNAL GRANTS

2012 "Collaborative Research: Electro-optical Studies of Nanoscale, Geometrically-Asymmetric Tunnel Junctions for Collection and Rectification of Light from Infrared to Visible," Division of ECCS / Energy, Power, Adaptive Systems (NSF-ECCS 1231313), $350,000. D.T. Zimmerman (PI), G.J. Weisel and B.L. Weiss (Co-PIs), effective 11/2012 – 10/2016.

2008 "RUI: Systematic Study of the Rheology and Sedimentation of Microwire-Based Magnetorheological Fluids," Division of CBET / Fluid Dynamics and Hydraulics (NSF-CBET 0755696), $179,859. R.C. Bell (PI), A.N. Vavreck and D.T. Zimmerman (Co-PIs), effective 07/2008 – 06/2011

2004 "RUI: Studies of the Heating and Sintering of Powdered Metals in Separate Electric and Magnetic Fields Using a Single Mode Microwave Cavity," National Science Foundation – Research at Undergraduate Institutions, Division of Materials Research / Metals (NSF-DMR 0406584), $373,700 (includes $73,750 match from Penn State University). D.T. Zimmerman (PI), N.M. Miskovsky, B.L. Weiss, and G.J. Weisel (Co-PIs), effective 06/2004 – 05/2007.

2000 "RUI: Studies of Single Molecule Vibrational Spectra and Zero Bias Features Using Adjustable Point-Contact Tunnel Junctions," National Science Foundation-Research at Undergraduate Institutions, Division of Materials Research / Condensed Matter Physics (NSF-DMR 0072148), $196,813 (includes $27,000 matching funds from Penn State University). D.T. Zimmerman (PI), effective 06/2000 – 05/2004.

INTERNAL GRANTS

2015 "Electro-optical measurements of rectenna arrays using white light," Undergraduate Research Grant, 2015, $3,000. With G.J. Weisel.

2014 "2D Percolating Metal-elastomer Films," MNS Summer Grant, $3,000. With G.J. Weisel.

2010 "Comparative study of electrical and elastic percolation in ferromagnetic-elastomer composites," Penn State Altoona Senior Research Award, $4,654. With R.C. Bell.

2009 "Nanowire-based-magnetorheological elastomers," Penn State Altoona College Summer Research program, $1500.

"Percolation in metal-insulator composites," Penn State Altoona Undergraduate Research Award, $500.

2008 "Using Percolation of Metal-insulator Mixtures as a Sensitive Chemical Sensor," Penn State Altoona Student Research Program, $750.

"Microwave Properties of Metal-insulator Mixtures," Penn State Altoona Student Research Program, $1,500.

2007 "Numerical Modeling and Computer Simulations of Microwire Magnetorheological Fluids," Altoona College Research Development Grant, $6,918. With R.C. Bell, J. Ma, and A.N. Vavreck.

2002 "Iron-Fiber Based Magnetorheological Fluids Realized by Matrix Drawing and Cryogenic Chopping," Altoona College Dean's Development Fund, $2,700.

"Modifications of a Single-mode Microwave Cavity for Heating Rate Studies of Powdered Metals," Altoona College Research Development Grant, $2,150.

"Rapid Heating of Powdered Metals in Microwave Electric and Magnetic Fields," Division of Mathematics and Natural Science, Penn State Altoona College Student Research Program, $1,500.

2001 "An Undergraduate Laboratory for Examining the Separate Roles of E- and H- Fields in the Microwave Sintering of Powdered Metals and Semi-Metals." Altoona College Research Development Grant, $2,150. Division of Mathematics and Natural Science, Penn State Altoona College Student Research Program, $1,500.

2000 "Nanotube-based Fluids," Altoona College Dean's Development Fund, $1,750.

"Tip Mount for Novel Scanning Probe Microscope," Division of Mathematics and Natural Science, Penn State Altoona College Student Research Program, $1,500.

1998 "Gas Handling System for Undergraduate Research Laboratory," Altoona College Dean's Fund, $2,950.

"Data Acquisition Unit for Undergraduate Research Laboratory," Altoona College Research Development Fund, $1,392.

1997 "Vacuum Chamber Cell and SATJ for Undergraduate Research Laboratory," Altoona College Research Development Fund, $1,500.

PAPERS PRESENTED (first author presenting)

2015 R. Wambold, G.J. Weisel, D.T. Zimmerman, J. Qi, and B.G. Willis, "Tunable optical extinction of e-beam fabricated rectennas modified by atomic-layer deposition," American Vacuum Society 62nd International Symposium and Exhibition, San Jose, CA, October 18 – 23, 2015.

D.T. Zimmerman, G.J. Weisel, B.G. Willis, P.H. Cutler, N.M. Miskovsky, J.M. Chen, R.A. Wambold, J. Qi, "Tunable optical extinction of nanoantennas for solar-energy conversion from near-infrared to visible," SPIE Optics + Photonics 2015, San Diego, CA, August 9 – 13.

R.A. Wambold, D.T. Zimmerman, G.J. Weisel, and B.G. Willis, "Light Rectifying Optical Antenna with Broad-band Operation from NIR to Visible," 57th Electronic Materials conference of the Materials Research Society, The Ohio State University, Columbus, OH, June 24 – 26, 2015.

2014 B.G. Willis, J. Qi, X. Jiang, J. Chen, G.J. Weisel, and D.T. Zimmerman, "Selective-area atomic layer deposition of copper nanostructures for direct electro-optical solar energy conversion," 2014 Electrochemical Society and Sociedad Mexicana de Electroquimica Joint International Meeting, Cancun, Mexico, October 5 – 9, 2014.

R. Wambold, J. Chen, P. Cutler, N. Miskovsky, M. Phillips, Z. Sinisi, G. Weisel, B. Willis, and D. Zimmerman, "Rectenna with broadband operation from near-infrared to visible," Annual Meeting of the Mid-Atlantic Section of the American Physical Society, University Park, PA, October 4, 2014.

R. Wambold, J. Chen, M. Phillips, D. Rager, Z. Sinisi, G. Weisel, B. Weiss, B. Willis, D. Zimmerman, "Nanoscale rectenna for broadband rectification of light from infrared to visible," March Meeting of the American Physical Society, Denver, CO, March 4, 2014.

2013 D.T. Zimmerman, J.M. Chen, G.J. Weisel, B.L. Weiss, "Nanoscale, geometrically-asymmetric tunnel junctions for collection and rectification of light from infrared to visible," Invited talk, Departments of Physics and Electrical Engineering, Rostock University, Rostock, Germany, March 1, 2013.

2011 D.T. Zimmerman, K. Adu, R.C. Bell, T.D. Hooper, G.J. Weisel, "Electromagnetic transport in magnetorheological elastomer composites," March Meeting of the American Physical Society, Dallas, TX, March, 2011.

2010 D.T. Zimmerman, "Transport phenomena and percolation in metal-insulator composites," Invited talk, Departments of Physics and Electrical Engineering, Rostock University, Rostock Germany, October 12, 2010.

D.T. Zimmerman, "Transport phenomena and percolation in metal-insulator composites," Invited talk, Department of Materials Science, Christian-Albrechts University, Kiel Germany, October 8, 2010.

2009 D.T. Zimmerman, R.C. Bell, J.A. Filer II, J.O. Karli, and N.M. Wereley, "Percolation behavior of cobalt-nanowire-based magnetorheological fluids," 2009 Nanoworkshop: The 4th International Workshop on Polymer/Metal Nanocomposites, Prague, Czech Republic, September 2 – 4, 2009.

D.T. Zimmerman, "Metal-insulator composites: from microwave sintering to percolation," Invited talk, Consortium for Electromagnetic Modeling and Inversion (CEMI), Department of Geology and Geophysics, University of Utah, May 15, 2009.

J.O. Karli, D.T. Zimmerman, J.A. Filer, R.C. Bell, and N.M. Wereley, "Percolation transition in nanowire magnetorheological fluids," March Meeting of the American Physical Society, Pittsburgh, PA, March, 2009.

D.T. Zimmerman, J.D. Cardellino, K.T. Cravener, K.R. Feather, N.M. Miskovsky, and G.J. Weisel, "Microwave absorption in percolating metal-insulator composites," March Meeting of the American Physical Society, Pittsburgh, PA, March, 2009.

2008 R. Bell, J. Karli, J. Krug, and D. Zimmerman, "Length dependence of the magnetorheological properties of cobalt microwires dispersed in silicone oil," March Meeting of the American Physical Society, New Orleans, LA, March, 2008.

D. Zimmerman, K. Martin, J. Cardellino, E. Johnson, J. Ma, N. Miskovsky, and G. Weisel, "Percolation Studies of Metal-insulator Composites at Microwave Frequencies," March Meeting of the American Physical Society, New Orleans, LA, March, 2008.

D. Zimmerman, J. Diehl, E. Johnson, K. Martin, J. Ma, N. Miskovsky, C. Smith, G. Weisel, B. Weiss, "Systematic Study of Microwave Absorption, Heating, and Microstructure Evolution of Porous Copper Powder Metal Compacts," March Meeting of the American Physical Society, New Orleans, LA, March, 2008.

2007 D.T. Zimmerman, "Microwave Heating and Sintering of Powdered Metals," Cabot Corporation, Billerica, MA, October 18, 2007.

2006 J. Ma, C.T. Smith, G.J. Weisel, B.L. Weiss, N.M. Miskovsky, and D.T. Zimmerman, "Single Mode Microwave Heating of Copper Powder Metal Compacts," 2006 COMSOL Users Conference, Boston, MA, October 22 – 24, 2006.

D.T. Zimmerman, E.J. Johnson, J. Ma, K.R. Martin, N.M. Miskovsky, C.T. Smith, G.J. Weisel, and B.L. Weiss, "Microwave Heating and Pre-sintering of Copper Powder Metal Compacts in Separated Electric and Magnetic Fields," Invited Talk, PM2006: World Congress on Powder Metallurgy, Busan, South Korea, September 24–28, 2006.

R.C. Bell, E.D. Miller, J.O. Karli, A.N. Vavreck, and D.T. Zimmerman, "Influence of Particle Shape on the Shear Strength of Magnetorheological Fluids," ERMR 2006: The 10th Conference on Electrorheological and Magnetorheological Fluids, Lake Tahoe, CA, June 18 – 22, 2006.

K.R. Martin, E. Johnson, J. Ma, N.M. Miskovsky, G. J. Weisel, B. L. Weiss, and D.T. Zimmerman, "Microwave Heating and Pre-sintering of Copper Powder Metal Compacts in Separated Electric and Magnetic Fields," Penn State Altoona Undergraduate Research Fair, April 11, 2006.

C.M. Lynch, E. Johnson, J. Ma, N.M. Miskovsky, G. J. Weisel, B. L. Weiss, and D.T. Zimmerman, "Complex Permittivity of Powder Metal Compacts by Cavity Perturbation Technique." Penn State Altoona Undergraduate Research Fair, April 11, 2006.

D.T. Zimmerman, "Making the Most of Metals in Your Microwave: Studies of the Heating and Sintering of Powdered Metals in Separate Electric and Magnetic Fields Using a Single Mode Microwave Cavity," Central Pennsylvania Section of the American Association of Physics Teachers, Pennsylvania College of Technology, April 8, 2006.

K.R. Martin, E. Johnson, J. Ma, N.M. Miskovsky, G. J. Weisel, B. L. Weiss, and D.T. Zimmerman, "Microwave Heating and Pre-sintering of Copper Powder Metal Compacts in Separated Electric and Magnetic Fields," Pennsylvania State University Undergraduate Research Exhibition, April 5, 2006.

C.M. Lynch, E. Johnson, J. Ma, N.M. Miskovsky, G. J. Weisel, B. L. Weiss, and D.T. Zimmerman, "Complex Permittivity of Powder Metal Compacts by Cavity Perturbation Technique." Pennsylvania State University Undergraduate Research Exhibition, April 5, 2006.

K.R. Martin, E. Johnson, J. Ma, N.M. Miskovsky, G. J. Weisel, B. L. Weiss, and D.T. Zimmerman, "Microwave Heating and Pre-sintering of Copper Powder Metal Compacts in Separated Electric and Magnetic Fields," March Meeting of the American Physical Society, Baltimore, MD, March, 2006.

C.M. Lynch, E. Johnson, J. Ma, N.M. Miskovsky, G.J. Weisel, B.L. Weiss, and D.T. Zimmerman, "Complex Permittivity of Powder Metal Compacts by Cavity Perturbation Technique." March Meeting of the American Physical Society, Baltimore, MD, March, 2006.

D.T. Zimmerman, "Making the Most of Metals in Your Microwave: Studies of the Heating and Sintering of Powdered Metals in Separate Electric and Magnetic Fields Using a Single Mode Microwave Cavity," Invited speaker, Penn State Altoona Colloquium, March 13, 2006.

2003 D.T. Zimmerman, "Lorentz Force Tunneling Spectrometer for Studying Molecules on Single Crystal Surfaces," Invited Talk, Penn State University, Department of Physics, October 10, 2003.

D.T. Zimmerman, D.L. Sharp, and G. Agnolet, "Lorentz Force Tunneling Spectrometer for Studying Molecules on Single Crystal Surfaces," March Meeting of the American Physical Society, San Antonio, TX, March, 2003.

2002 D.L. Sharp, D.T. Zimmerman, and G. Agnolet, "Lorentz Force Feedback Scanning Tunneling Microscope," March Meeting of the American Physical Society, Indianapolis, IN, March, 2002.

2001 D.T. Zimmerman and G. Agnolet, "An Adjustable Oxide-free Tunnel Junction for Vibrational Spectroscopy of Molecules," Poster presentation at "Nanoscience: Underlying Physical Concepts and Phenomena," The Arthur M. Sackler Colloquia of the National Academy of Sciences, Washington, D. C., May 18-20, 2001.

2000 G. Agnolet, S.R. Savitski, M.B. Weimer, and D.T. Zimmerman, "Zero Bias Features in Self-Assembling Tunnel Junctions," March Meeting of the American Physical Society, Minneapolis, MN, March, 2000. Session Chair: *Surface, Excitations, Energetics and Non-Equilibrium Effects*.

D.T. Zimmerman and G. Agnolet, "Intensity Studies of Inelastic Electron Tunneling Spectra," March Meeting of the American Physical Society, Minneapolis, MN, March, 2000.

1999 D.T. Zimmerman and G. Agnolet, "A Point Contact Device for Use as an In-situ Chemical Sensor," Joint International Meeting of The Electrochemical Society and The Electrochemical Society of Japan, Honolulu HI, October 17-22, 1999.

G. Agnolet, D.T. Zimmerman, S.R. Savitski, and M.B. Weimer, "A New Geometry for Inelastic Electron Tunneling Spectroscopy," XXII International Conference on Low Temperature Physics, Helsinki, Finland, August, 1999.

G. Agnolet, D.T. Zimmerman, S.R. Savitski, and M.B. Weimer, "Zero Bias Features In Self-Assembling Tunnel Junctions," XXII International Conference on Low Temperature Physics, Helsinki, Finland, August, 1999.

D.T. Zimmerman, M.B. Weimer, and G. Agnolet, "A Point-Contact Tunnel Junction for Use as a Sensitive Chemical Detector and Force Transducer," March Meeting of the American Physical Society, Atlanta, Georgia, March, 1999.

1998 D.T. Zimmerman, M.B. Weimer, and G. Agnolet, "Vibrational Spectroscopy of Acetylene Using Point-Contact Tunnel Junctions," March Meeting of the American Physical Society, Los Angeles, California, March, 1999.

D.T. Zimmerman, "Point-Contact Tunnel Junctions," Invited Talk, Paul S. Weiss Research Group, Department of Chemistry, Penn State University, February 24, 1998.

1997 D.T. Zimmerman, M.B. Weimer, and G. Agnolet, "The Self-Assembling Tunnel Junction: An Adjustable Microscopic Junction for Vibrational Spectroscopy," March Meeting of the American Physical Society, Kansas City, Missouri, March, 1997.

1996 D.T. Zimmerman, M.B. Weimer, and G. Agnolet, "The Self-Assembling Tunnel Junction: An Adjustable Microscopic Junction for Vibrational Spectroscopy," Texas Section Meeting of the American Physical Society, Arlington, Texas, October, 1996.

G. Agnolet, D.T. Zimmerman, M.B. Weimer, "Vibrational Spectroscopy of Adsorbed Molecules Using Self-Assembling Tunnel Junctions," XXI International Conference on Low Temperature Physics, Prague, Czech Republic, August, 1996.

D.T. Zimmerman and G. Agnolet, "Vibrational Spectroscopy of Adsorbed Molecules Using Self-Assembling Tunnel Junctions," March Meeting of the American Physical Society, St. Louis, Missouri, March 1996.

1995 D.T. Zimmerman and G. Agnolet, "Inelastic Electron Tunneling Spectroscopy Using Self-Assembling Tunnel Junctions," Texas Section Meeting of the American Physical Society, Lubbock, Texas, October 1995.

THESES AND DISSERTATIONS

RAYMOND A. WAMBOLD, "Optical characterization of bowtie and heterodimer antenna arrays: optimizing device properties for sensing or photoharvesting applications," M.S. Materials Science and Engineering (expected May 2016).

TOMASZ J. GALEK, "Modeling of microwave absorption mechanisms in metallic powders," Dr.-Ing., Department of Computer and Electrical Engineering, Rostock University, Germany (2013).

KELLY R. FEATHER, "Microwave absorption and heating in copper powder-metal compacts," M.S. Materials Science and Engineering, The Pennsylvania State University (2010).

CHRISTOPHER M. LYNCH, B.S. Mathematics with Honors in Physics, "The separate roles of electric and magnetic fields to microwave energy absorption in powder metal compacts," Department of Physics and Schreyer Honors College, The Pennsylvania State University (2006).

RESEARCH MENTORING

Postdoctoral Associate

JunKun Ma, Ph.D. (2005 – 2007)

Graduate Students

Raymond A. Wambold, M.S. student in MatSE (2013 – present)
Timothy D. Hooper, M.S. Physics (Non-thesis; 2010 – 2013, degree conferred 05/2014)
Kelly R. Feather, M. S. MatSE (2006 – 2010, degree conferred 05/2010)

Undergraduate Students

Cassandra J. Carrick, B.S. Math/Electromech. Engineering Technology (2016 – present)
Joseph M. Lent, B.S. Electromechanical Engineering Technology (2016 – present)
Mason G. McGinnis, B.S. Electrical Engineering (2015 – present)
Adam T. Hosier, B.S. Mechanical Engineering & Physics (2015 – present)
Chien-Yu Wang, B.S. Computer Engineering (2014 – 2015)
Mark E. Cassarly, B.S. Electromechanical Engineering Technology (2014 – present)
Benjamin D. Borst, B.S. Electromechanical Engineering Technology (2014 – present)
Michael S. Phillips, B.S. Computer Engineering (2013 – 2014)
Dennis P. Rager, B.S. Electromechanical Engineering Technology (2012 – 2014)
Michael J. Robinson, B.S. Mechanical Engineering (2013)
Zachary J. Sinisi, B.S. Mechanical Engineering (2013 – 2014)
Eric Z. Traister, B.S. Computer Engineering (2013 – 2014)
Ryan M. Pearson, B.S. Biochemistry (2011)
Tyler J. Yarger, B.S. Chemistry (2011)
Lichi Li, B.S. Mathematics (2011)
Johnny M. Serafin, B.S. Chemical Engineering (2011)
Renhong Zhu, B.S. Science (2011)
Evan P. Cullen, B.S. Mechanical Engineering (2011)
Brennan L. Healy, B.S. Aerospace Engineering (2011)
Scott C. Jorbel, B.S. Mechanical Engineering (2011)
Benjamin M. Knisely, B.S. Mechanical Engineering (2011)

Kevin M. Ninehouser, B.S. Materials Science & Engineering (2011)
Joshua A. Noble, B.S. Electrical Engineering & Physics (2011)
Ryan A. Plessinger, B.S. Nuclear & Mechanical Engineering (2009 – 2010)
Stephen M. Ruhl, B.S. Biology/Environmental Studies (2009 – 2010)
Joshua O. Karli, B.S. Science (2009 – 2010)
Kyle T. Cravener, B.S. Mechanical Engineering (2008 – 2009)
Jeremy D. Cardellino, B.S. Physics (2007 – 2009)
Kelly R. (Martin) Feather, B.S. Science (2005 – 2006)
Charles T. Smith III, B. S. Physics (2005 – 2007)
Derek H. Bailey, B.S. Mechanical Engineering (2006 – 2007)
John F. Diehl, B. S. Physics (2005 – 2007)
Christopher M. Lynch, B. S. Mathematics/Physics (2005 – 2006)
Devin F. Spratt, B. S. Mechanical Engineering (2005 – 2006)
Brad A. Petrilla, B. S. Aerospace Engineering (2004 – 2005)
John R. Rea, B. S. Electrical Engineering (2004 – 2005)
Darin S. Merrill, B. S. Electrical Engineering (2003 – 2004)
James R. Brenner, B. S. Mechanical Engineering (2003 – 2004)
Jamie D. McCulloch, B. S. Computer Engineering (2001 – 2002)
Steven Liao, B. S. Electrical Engineering (2001 – 2002)
Justin M. Huffman, B. S. Science (2001 – 2002)
Nathaniel A. Anderson, B. S. Computer Information Technology (2001 – 2002)
Brandon L. Kline, B. S. Mechanical Engineering (2001 – 2002)
Ross A. Rager, B. S. Mechanical Engineering (2001 – 2002)
Scott. D. Rodgers, B. S. Aerospace Engineering (2000 – 2001)
Darrell L. Sharp, B. S. Electromechanical Engineering Technology (2000 – 2003)

COLLABORATORS

Gary J. Weisel (Penn State Altoona, Physics)
Brian G. Willis (University of Connecticut, Chemical Engineering)
Paul H. Cutler (Penn State Physics and Scitech Associates, LLC)
Nicholas M. Miskovsky (Penn State Physics and Scitech Associates, LLC)

COURSES TAUGHT

MATSE 596 (Research in Materials Science and Engineering)
PHYS 596 (Topics in Electromagnetic Theory: Jackson, Landau and Lifshitz)
PHYS 296; 496 (Undergraduate Research in Physics)
PHYS 419 (Theoretical Mechanics: Thornton & Marion; Taylor)
PHYS 237 (Introduction to Modern Physics: Taylor, Zafiratos, and Dubson)
PHYS 214 (General Physics - Wave Motion and Quantum Physics: Knight; Serway)
PHYS 213 (General Physics - Fluids and Thermal Physics: Knight; Serway)
PHYS 212 (General Physics - Electricity and Magnetism: Knight; Serway)
PHYS 211 (General Physics – Mechanics: Knight; Serway)

PHYS 251 (Introductory Physics II: Cutnell & Johnson; Zimmerman)
PHYS 250 (Introductory Physics I: Cutnell & Johnson; Zimmerman)
PHYS 097 (Special Topics in Mechanics: Cole)
PHYS 1 (The Science of Physics: Hewitt; Muller)

PROFESSIONAL AFFILIATIONS

American Association of Physics Teachers
American Physical Society
Council on Undergraduate Research
International Society for Optics and Photonics
Materials Research Society

MANUSCRIPT REVIEWER / PROPOSAL REFEREE

Academic Press
Addison-Wesley Longman Publishers
American Journal of Physics
Applied Physics Letters
Israel Science Foundation
Journal of Applied Physics
McGraw-Hill Higher Education
Nanoscale Research Letters
National Science Foundation
U.S. Civilian Research and Development Foundation

AWARDS AND RECOGNITION

2006 Nominated for the the George W. Atherton Award for Excellence in Teaching, Schreyer Institute for Teaching Excellence, The Pennsylvania State University.

2005 Nominated for the the George W. Atherton Award for Excellence in Teaching, Schreyer Institute for Teaching Excellence, The Pennsylvania State University.

1999 Robert A. Welch Postdoctoral Research Fellowship, Department of Physics, Texas A&M University.

1997 Summer Faculty Research Fellowship with Paul S. Weiss, American Chemical Society-Petroleum Research Fund, Department of Chemistry, The Pennsylvania State University.

1996 Outstanding Physics Teaching Assistant at Texas A&M University

1996 Outstanding Presentation Award from the Texas Section of the American Physical Society, University of Texas at Arlington.

1994 McDonald's Award for Excellence in Teaching by Graduate Students, Texas A&M University.

OUTREACH TO THE COMMUNITY

Board member, Love in Action International Ministries (2010 – present): building and supporting self-sustaining orphanges in Central and South America (www.liaim.com).

President, *STEM Connections 4 Kids* (2012 – 2015): supporting Science, Technology, Engineering, and Mathematics initiatives in the local public schools.

Scholastic Scrimmage, high school coach, WPSU Public Broadcasting, The Pennsylvania State University (2007 – 2009).

High school faculty engineering advisor, Pittsburgh Regional Rube Goldberg Challenge (2006).

High School Coach, U. S. Department of Energy National Science Bowl (2004 – 2008).

Senior Project Supervisor for Valerie Kaplan, student, The Grier School for Girls, Tyrone, PA (May, 2000).

Tutor, The Grier School for Girls (1999 – 2002).

Science Curriculum Advisor and Adjunct Instructor (Chemistry, Mathematics, and Physics), Great Commission Schools (1998 – 2008).

Co-Organizer and Presenter, "The Wonders of Physics & Chemistry," Foot of Ten Elementary School, Duncansville, PA (May, 1999)

Co-Organizer and Presenter, "Hands-On Physics Laboratory for Elementary and Secondary School Students," YMCA, Hollidaysburg, PA (July 1998).

Expert Source, "Blast Equal to Six Dynamite Sticks, Expert Says," by William Kibler, *Altoona Mirror* pp. A1, A6 (December 13, 1998).